

What is claimed is:.

1. A recording and reproducing apparatus for receiving program data including video data and/or voice data and recording and/or reproducing said program data, comprising:

a temporary saving area that is a ring buffer of temporarily recording said program data;

a long-term saving area of recording said program data for a long term; and

record reproducing means of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area,

wherein said record reproducing means copies predetermined program data recorded at least in said temporary saving area to said long-term saving area if said record reproducing means is instructed to record said program data for a long term when it is performing in said temporary saving area the time shift reproduction of program data that is being received.

2. The recording and reproducing apparatus according to claim 1,

wherein said record reproducing means copies program data after temporarily recording said program data in said temporary

saving area until the program of said program data that is being received ends.

3. A recording and reproducing apparatus for receiving program data including video data and/or voice data and recording and/or reproducing said program data, comprising:

a temporary saving area that is a ring buffer of temporarily recording said program data;

a long-term saving area of recording said program data for a long term; and

record reproducing means of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area,

wherein said record reproducing means copies predetermined program data recorded in said temporary saving area to said long-term saving area and at the same time records program data that is being received other than that copied in said long-term saving area in said long-term saving area if said record reproducing means is instructed to record said program data for a long term when it is performing the time shift reproduction of said program data that is being received in said temporary saving area.

4. The recording and reproducing apparatus according to claim 3,

wherein timing at which said record reproducing means copies said program data from said temporary saving area to said long-term saving area is performed immediately after said record reproducing means is instructed to record said program data for a long time.

5. The recording and reproducing apparatus according to claim 3,

wherein timing at which said record reproducing means copies said program data from said temporary saving area to said long-term saving area is performed immediately before said temporary saving area is overwritten and recorded.

6. The recording and reproducing apparatus according to claim 3,

wherein said record reproducing means records said program data that is being received in said long-term saving area after stopping at least a recording operation with respect to said temporary saving area.

7. The recording and reproducing apparatus according to claim 3,

wherein said predetermined program data to be copied from said temporary saving area to said long-term saving area is all or a part of program data recorded in said temporary saving area and, in case of said part of said recorded program data,

said predetermined program data is data recorded in an arbitrary area on said temporary saving area.

8. A recording and reproducing apparatus for receiving program data including video data and/or voice data and recording and/or reproducing said program data, comprising:

a recording area in which a temporary saving area of temporarily recording said program data and a long-term saving area of recording said program data for a long term can be set; and

record reproducing means for setting said temporary saving area and said long-term saving area on said recording area and performs at least recording, reproduction or time shift reproduction of said program data in said temporary saving area or said long-term saving area,

wherein said record reproducing means resets a predetermined portion in which said program data from a reproduction position address to a recording position address at the time of said time shift reproduction on said temporary saving area as said long-term saving area if said record reproducing means is instructed to record said program data for a long term when it is performing in said temporary saving area the time shift reproduction of program data that is being received.

9. The recording and reproducing apparatus according to claim 8,

wherein said predetermined portion to be treated as said long-term saving area, in which said program data is recorded on said temporary saving area, is all or a part of said temporary saving area and, in case of said part of said temporary saving area, said predetermined portion is data recorded in an arbitrary area on said temporary saving area.

10. The recording and reproducing apparatus according to claim 8,

wherein an area of a size identical with a long-term saving area obtained by said resetting on said long-term saving area is reset as said temporary saving area.

11. The recording and reproducing apparatus according to any one of claims 1, 3 and 8,

wherein said program data is temporarily recorded in the order of receipt in said temporary saving area, and

said program data is temporarily recorded such that said program data can be identified from each other for each channel and/or each program on said temporary saving area.

12. The recording and reproducing apparatus according to claim 11,

wherein said record reproducing means connects predetermined portions among said program data temporarily

recorded in said temporary saving area based on an input from a user and copies the connected portions to said long-term saving area.

13. The recording and reproducing apparatus according to claim 11,

wherein said program data with said predetermined portions connected belongs to one program.

14. The recording and reproducing apparatus according to claim 11,

wherein identification of said program data is defined by an EPG (Electronic Program Guide).

15. The recording and reproducing apparatus according to any one of claims 1, 3 and 8,

wherein said record reproducing means deletes program data recorded in said temporary saving area if any program of program data temporarily recorded in said temporary saving area ends.

16. The recording and reproducing apparatus according to claim 15,

wherein said any program is a program that a user is currently being viewed by a user.

17. The recording and reproducing apparatus according to claim 15, further comprising notifying means of notifying a

user of operating contents of said recording and reproducing apparatus,

wherein said notifying means notifies the user that program data recorded in said temporary saving area is to be deleted.

18. The recording and reproducing apparatus according to claim 15, further comprising an input unit for receiving an input operation from a user,

wherein program data in said temporary saving area is deleted by the input operation of the user via said input unit.

19. The recording and reproducing apparatus according to claim 15,

wherein a time when said program ends is defined by an EPG (Electronic Program Guide).

20. The recording and reproducing apparatus according to any one of claims 1, 3 and 8,

wherein said temporary saving area has a plurality of temporary saving files.

21. The recording and reproducing apparatus according to claim 20,

wherein said program data of one program is temporarily recorded in one of said temporary saving files.

22. The recording and reproducing apparatus according to claim 20 or 21,

wherein said temporary saving file has temporary saving files in a number of programs that a user has viewed.

23. The recording and reproducing apparatus according to claim 21,

wherein said program is defined by an EPG (Electronic Program Guide).

24. The recording and reproducing apparatus according to any one of claims 1, 3 and 8, further comprising image quality changing means of changing an image quality of program data to be recorded in said temporary saving area and/or said long-term saving area.

25. The recording and reproducing apparatus according to claim 24,

wherein change of an image quality of program data to be recorded in said long-term saving area is for making the image quality equal to or lower than an image quality of program data temporarily recorded in said temporary saving area.

26. The recording and reproducing apparatus according to claim 25,

wherein an image quality of said program data to be temporarily recorded in said temporary saving area is set at the highest.

27. The recording and reproducing apparatus according to claim 24,



wherein said image quality changing means makes all image qualities of program data of an identical program to coincide with each other if an image quality varies in said program data of said identical program.

28. The recording and reproducing apparatus according to claim 27,

wherein an operation for making all the image qualities of said program data of said identical program is automatically performed when said program ends.

29. The recording and reproducing apparatus according to claim 27,

wherein an operation for making all the image qualities of said program data of said identical program is automatically performed when said record reproducing means is not performing a recording operation after said program ends.

30. The recording and reproducing apparatus according to claim 24,

wherein said record reproducing means records program data for a long term with an image quality identical with that of program data saved in said temporary saving area until a program ends and said image quality changing means converts an image quality of program data recorded in said long-term saving area to an image quality designated by a user after said program ends if an image quality different from an image

quality of program data recorded in said temporary saving area is designated in said image quality changing means in recording program data for a long time in said long-term saving area.

31. The recording and reproducing apparatus according to any one of claims 28 to 30,

wherein the end of said program is defined based on an EPG (Electronic Program Guide).

32. The recording and reproducing apparatus according to claim 24, further comprising a scene change detecting unit for detecting a change of scenes in program data of identical programs or programs different from each other,

wherein said image quality changing means has a function for, if a long-term recording of an image quality different from an image quality recorded in said temporary saving area is designated, changing an image quality to an image quality designated by the user based on said change of scenes detected by said scene change detecting unit.

33. The recording and reproducing apparatus according to claim 1 or 8,

wherein said ring buffer of said temporary saving area has a variable length.

34. The recording and reproducing apparatus according to claim 3 or 8,

wherein said ring buffer of said temporary saving area has a fixed length.

35. A recording and reproducing method for receiving program data including video data and/or voice data and recording and/or reproducing said program data, comprising :

a step of using a temporary saving area that is a ring buffer of temporarily recording said program data and a long-term saving area of recording said program data for a long term; and

a record reproducing step of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area,

wherein by said record reproducing step predetermined program data recorded at least in said temporary saving area is copied to said long-term saving area if in said record reproducing step it is instructed to record said program data for a long term when the time shift reproduction of program data that is being received in said temporary saving area is performed.

36. A recording and reproducing method for receiving program data including video data and/or voice data and recording and/or reproducing said program data, comprising:

a step of using a temporary saving area that is a ring

buffer of temporarily recording said program data and a long-term saving area of recording said program data for a long term; and

a record reproducing step of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area,

wherein by record reproducing means predetermined program data recorded in said temporary saving area is copied to said long-term saving area and at the same time program data that is being received other than that copied in said long-term saving area in said long-term saving area is recorded if in said record reproducing means it is instructed to record said program data for a long term when the time shift reproduction of said program data that is being received in said temporary saving area is performed.

37. A recording and reproducing method for receiving program data including video data and/or voice data and recording and/or reproducing said program data, comprising:

a step of using a recording area in which a temporary saving area of temporarily recording said program data and a long-term saving area for recording said program data of a long term can be set; and

a record reproducing step of setting said temporary

saving area and said long-term saving area on said recording area and performs at least recording, reproduction or time shift reproduction of said program data in said temporary saving area or said long-term saving area,

wherein by said record reproducing means a predetermined portion in which said program data from a reproduction position address to a recording position address is reset at the time of said time shift reproduction on said temporary saving area as said long-term saving area if in said record reproducing step it is instructed to record said program data for a long term when the time shift reproduction of program data that is being received in said temporary saving area is performed.

38. A program for causing a computer to function as all or any of the record reproducing means of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area of the recording and reproducing apparatus according to claim 1.

39. A program for causing a computer to function as all or any of the record reproducing means of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area of the recording and reproducing

apparatus according to claim 3.

40. A program for causing a computer to function as all or any of the record reproducing means of setting said temporary saving area and said long-term saving area on said recording area and performs at least recording, reproduction or time shift reproduction of said program data in said temporary saving area or said long-term saving area of the recording and reproducing apparatus according to claim 8.

41. A medium to store programs for causing a computer to function as all or any of the record reproducing means of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area of the recording and reproducing apparatus according to claim 1, wherein said medium is enable to be processed by said computer.

42. A medium to store programs for causing a computer to function as all or any of the record reproducing means of at least performing recording, reproduction or time shift reproduction of said program data in said temporary saving area and/or said long-term saving area of the recording and reproducing apparatus according to claim 3, wherein said medium is enable to be processed by said computer.

43. A medium to store programs for causing a computer to function as all or any of the record reproducing means of

setting said temporary saving area and said long-term saving area on said recording area and performs at least recording, reproduction or time shift reproduction of said program data in said temporary saving area or said long-term saving area of the recording and reproducing apparatus according to claim 8, wherein said medium is enable to be processed by said computer.